

THERMOSPHAEROMA CAVICAUDA AND *T. MACRURA*,
NEW SPHAEROMATID ISOPODS FROM
MEXICAN HOT SPRINGS

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Abstract.—*Thermosphaeroma cavicauda* n. sp. is described from a hot spring (29°C) in Durango, Mexico. It is unique within the genus in having a terminal notch in the telson and well developed branchial folds. *Thermosphaeroma macrura* n. sp., described from a hot spring (32°) in central Chihuahua, Mexico, is characterized by an unusually long pleotelson. The two new species bring the number of known species of *Thermosphaeroma* to seven.

The five known species of *Thermosphaeroma*, reviewed by Bowman (1981), inhabit hot springs in the southwestern United States and Mexico. The isolated nature of these springs has produced a high degree of endemism in their faunas, and we may expect that as more springs are explored additional species of *Thermosphaeroma* will be found. Two such species are described herein.

Thermosphaeroma cavicauda, new species

Figs. 1-3

Material.—Mexico, Durango State, spring-fed ditch about 0.6 km W of La Laguna, 5-6 km ESE of highway 45, 24°10'25"N, 104°38'19"W, leg. R. R. Miller and D. L. Soltz, 13 Apr 1983: ♂ holotype, USNM 227044, and 39 paratypes, USNM 227045.

Etymology.—From the Latin "cavus," hollow, hole, plus "cauda," tail, referring to the terminal notch in the telson, lacking in other known species of *Thermosphaeroma*. Proposed as a noun in apposition.

Description.—Length up to 10.2 mm. Body about 0.58 × as wide as long, pereon lateral margins nearly parallel. Pereopods hirsute; pereonites only sparsely hirsute. Pleotelson almost $\frac{2}{3}$ as long as basal width, triangular, lateral margins weakly convex, becoming slightly concave near apex; apex with shallow U-shaped notch. Clypeus $\frac{2}{3}$ as long as wide, anterior margin rounded. Antenna 1 flagellum 6-8-merous; antenna 2 flagellum up to 12-merous. Mandible incisors 4-cusperate; lacinia 3-cusperate; right spine-row with 7 spines (1st 3 with common base), left spine-row with bifid apex. Maxilla 1 outer ramus with 2 short dentiform spines, outer spine with bifid apex. Flexor margin of dactyl of pereopod 1 armed with cylindrical spinules. Appendix masculina of pleopod 2 sinuous, much longer than endopod. Branchial folds well developed on both surfaces of rami of pleopods 4 and 5. Pleopod 5 endopod with only slight indication of incision on lateral margin proximal to reniform swelling. Exopod of uropod subequal in length to endopod or slightly longer in smaller specimens, apex pointed and curved slightly laterad; endopod with medial margin curving rather abruptly laterad distally, ending in angular distolateral corner.

Comparisons.—*Thermosphaeroma cavicauda* can be distinguished immediately



Fig. 1. *Thermosphaeroma cavicauda*: A, Head, ventral; B, Antenna 1; C, Antenna 2; D, Incisor, lacinia, and spine row of left mandible; E, Incisor of right mandible; F, Spine row of right mandible; G, Mandibular palp; H, Maxilla 2; I, J, Outer and inner rami of maxilla 1; K, Maxilliped; L, Maxilliped, detail of endite; M, Pereopod 1.

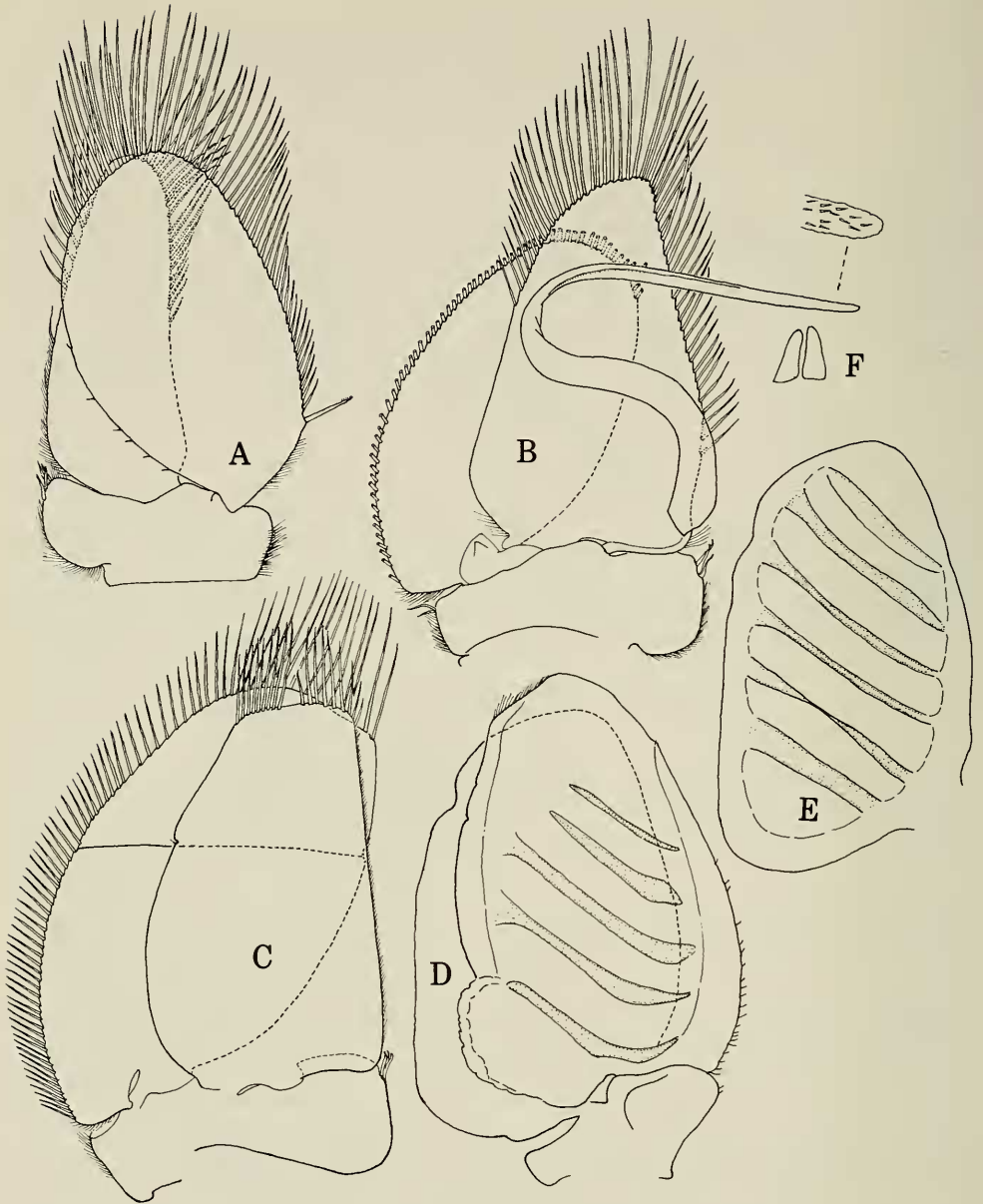


Fig. 2. *Thermosphaeroma cavicauda*, ♂: A, Pleopod 1; B, Pleopod 2; C, Pleopod 3; D, Pleopod 4 (folds of endopod not shown); E, Pleopod 4 endopod; F, Penes.

from all known species of *Thermosphaeroma* by the terminal notch in the telson, lacking in all other species of the genus. Except for the notch, the pleotelson is similar in shape to that of *T. milleri*. The uropods are similar in shape and proportions to those of *T. smithi*, although the exopod is proportionally longer in the latter species. The branchial folds are better developed in *T. cavicauda* than in other species of *Thermosphaeroma*.

Habitat. — The spring-fed ditch from which *T. cavicauda* was collected was 0.3–

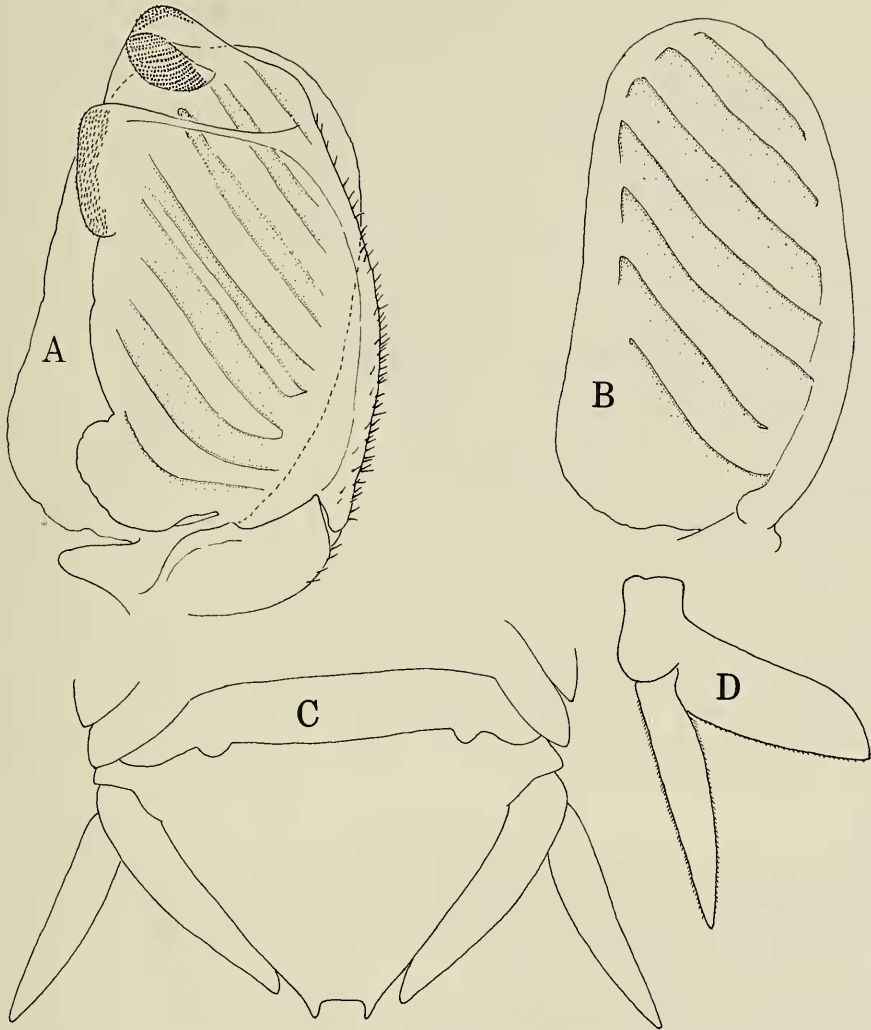


Fig. 3. *Thermosphaeroma cavicauda*: A, Pleopod 5 (folds of endopod not shown); B, Pleopod 5 endopod; C, Pleon and pleotelson; D, Right uropod, ventral.

1.0 m wide with pools 5–7 m in diameter. Depth was generally about 0.3 m. The bottom sediment was fine silt and mud. The water was clear, but quickly became muddied when disturbed. The temperature of the water was 29°C, of the air 25°C. Dissolved O₂ measured 8.0 ml/liter. Specific conductance was 315 micromhos/cm.

Thermosphaeroma macrura, new species

Fig. 4

Material.—Mexico, Chihuahua State, stream tributary to Río Conchos, about 0.5 km S of Julimes, leg. R. R. Miller and D. L. Soltz, 17 Apr 1983; ♂ holotype, USNM 227046, and juvenile paratype, USNM 227047.

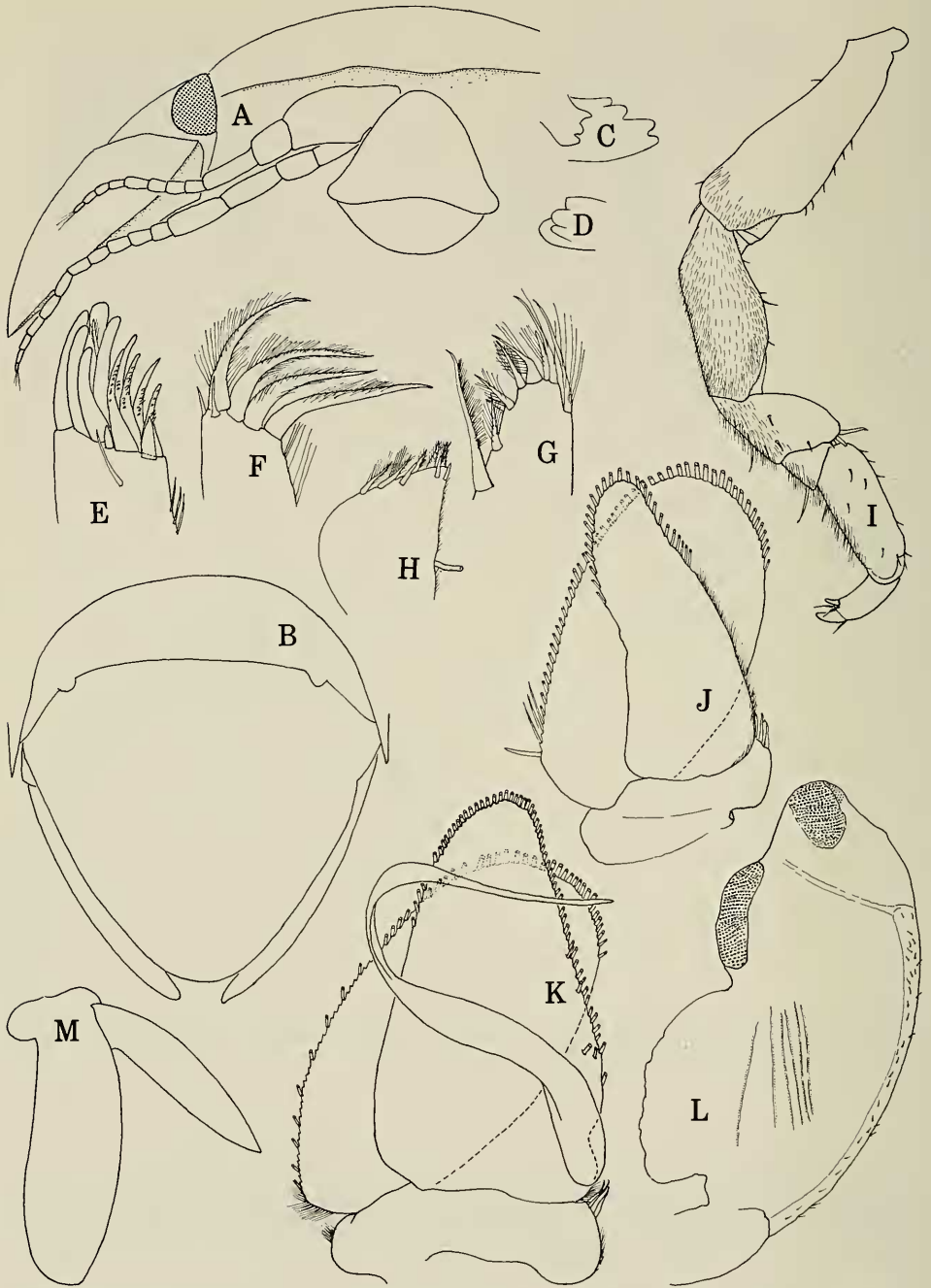


Fig. 4. *Thermosphaeroma macrura*, ♂ holotype: A, Head, ventral; B, Pleon and pleotelson, dorsal; C, Incisor and lacinia of left mandible; D, Incisor of right mandible; E, F, Outer and inner rami of maxilla 1; G, Inner ramus of maxilla 2; H, Endite of maxilliped; J, Pleopod 1; K, Pleopod 2; L, Pleopod 5 exopod; M, Right uropod, dorsal.

Etymology.—From the Greek “makros,” long, plus “oura,” tail, referring to the unusually long pleotelson. Proposed as a noun in apposition.

Description.—Length of holotype 10.8 mm, of paratype 7.0 mm. Body about $0.54\times$ as wide as long; pereon gradually widening through pereonite 5, then gradually narrowing. Pereopods hirsute; pereonites sparsely hirsute. Pleotelson about $0.9\times$ as long as basal width, lateral margins evenly convex, apex rounded. Clypeus nearly $\frac{2}{3}$ as long as wide, anterior margin rounded. Antenna 1 flagellum 9-merous; antenna 2 flagellum 14-merous. Mandible incisors 4-cusped, lacinia 3-cusped. Maxilla 1 outer ramus with 2 dentiform spines, inner spine nearly twice length of outer. Flexor margin of dactyl of pereopod 1 unarmed except for accessory claw. Appendix masculina of pleopod 2 sinuous, much longer than endopod. Branchial folds not strongly developed on pleopods 4 and 5. Pleopod 5 exopod with shallow U-shaped incision on lateral margin proximal to reniform swelling. Exopod of uropod about $0.7\times$ as long as endopod, apex pointed; endopod with broadly rounded apex with a slight lateral shoulder.

Comparisons.—*Thermosphaeroma macrura* has a markedly more elongate pleotelson than other species of the genus. The uropods of *T. subequalum* are most similar in shape, but are subequal in length. The endopod of pleopod 5 resembles that of *T. smithi*, but the latter has quite differently shaped uropods and pleotelson, and 2-cusped incisors.

Habitat.—The stream from which *T. macrura* was collected was 5–10 m wide and probably up to 1 m deep. The bottom consisted of mud, silt, rocks, and boulders. The water was clear, but murky, and easily roiled. It was badly polluted. The temperature of the water was 32°C, of the air 34°C. Specific conductance was 1790 micromhos/cm.

Remarks

The new localities extend the known range for *Thermosphaeroma*. The type-locality for *T. macrura* is near that of *T. smithi*, but that of *T. cavicauda* is the first record of the genus from Durango, and represents a western expansion of the generic range.

The modified diagnosis of *Thermosphaeroma* (Bowman 1981) requires further modification to accommodate *T. cavicauda*. The modified sentences are (additions italicized): (1) Branchial folds *usually* weak or absent on pleopod 4 exopod, *sometimes well developed*; (2) Pleotelson similar in both sexes, rounded posteriorly, *usually* without, *sometimes with* terminal notch or slit.

Acknowledgments

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Literature Cited

- Bowman, Thomas E. 1981. *Thermosphaeroma milleri* and *T. smithi*, new sphaeromatid isopod crustaceans from hot springs in Chihuahua, Mexico, with a review of the genus.—*Journal of Crustacean Biology* 1(1):105–122.

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